

# ACTIVITY UPDATE – STYBARROW DECOMMISSIONING ENVIRONMENT PLANS

## EXMOUTH PLATEAU SUB-BASIN, NORTH-WEST AUSTRALIA

Woodside consults relevant persons in the course of preparing an Environment Plan (EP) to notify them, obtain their input and to assist Woodside to confirm current measures or identify additional measures, if any, that could be taken to lessen or avoid potential adverse effects of the proposed activity on the environment. This is the intended outcome of consultation.

Woodside's aim is to ensure the activity is carried out in a manner that is consistent with the principles of Ecologically Sustainable Development (ESD), by which the environmental impacts and risks of the activity are reduced to As Low As Reasonably Practicable (ALARP) and of an acceptable level. We want relevant persons whose functions, interests or activities may be affected by the proposed activity to have the opportunity to provide feedback on our proposed activity, in accordance with the intended outcome of consultation.

### Overview

Woodside is planning to undertake subsea decommissioning activities for the Stybarrow field (previously operated by BHP Petroleum Pty Ltd (BHP)), which is located in Commonwealth waters in permit area WA-32-L, approximately 53 km north-west of Exmouth, Western Australia and in water depths of approximately 810 - 850m (**Figure 1**).

Regulatory approvals are being sought for the following activities:

#### Stybarrow plug and production (P&A) EP

- Well P&A of the 10 productions/injection wells by placing cement plugs in the wells to permanently prevent hydrocarbon release.
- Potential unblocking of the H4 flowline, if deemed feasible.

#### Stybarrow Decommissioning and Field Management EP

- Removal of subsea equipment including wellheads, trees, manifolds, risers, flexible flowlines, umbilicals.
- Removal of the Disconnectable Turret Mooring (DTM) and its moorings. Recovery of the DTM may require it to be towed to shallower water outside of permit area WA-32-L. It is intended that the DTM will be towed to WA-12-L, adjacent to the Woodside-operated Griffin field, in water depths of about 120 m and, that the DTM would be placed directly onto a vessel, not placed on the seabed.
- Ongoing field management activities (equipment monitoring and inspection).

#### Stybarrow Field Deviation EP

- Proposed leave *in situ* of the nine DTM drag anchors (buried), nine suction piles for the riser holdbacks and the historical exploration wellhead, Eskdale-1, which was unable to be removed following its drilling and abandonment in 2003.

P&A activities are anticipated to take approximately 6-9 months to complete, removal activities are anticipated to take approximately 6 months to complete and DTM removal activities are anticipated to take approximately 2-4 weeks to complete.

Decommissioning of the Stybarrow field is planned to be undertaken following acceptance of the EP, with work anticipated to commence around late 2023, commencing with P&A pre-execution activities, subject to vessel availability and weather constraints.

The P&A activities are required to be completed by 30 September 2024 and equipment removal completed by 31 March 2025, as per NOPSEMA General Direction 833.

Following removal, Woodside proposes to dispose of equipment onshore in accordance with applicable requirements, assessing all options to reduce waste through reuse or recycling of recovered equipment.

The equipment locations and proposed activity or end state is summarised at **Table 2**.

EPs for these activities have previously been submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009*.

This Activity Update provides an overview of proposed activities under each of the three EPs, as well as additional information or changes to information previously provided.

Feedback from relevant persons as part of current consultation activities will be included in revisions to the EPs, which will be submitted to NOPSEMA for further assessment.

#### Stybarrow Decommissioning Background

The Stybarrow development was in production from 2007 to 2015 and consisted of the Stybarrow floating production, storage and offloading (FPSO) facility and its moorings, subsea facilities including 10 subsea wells (production and water/gas injectors), the associated trees, manifolds, risers, flowlines, umbilicals and the DTM buoy which connected the FPSO to the subsea infrastructure.

Since 2015 the following activities have been completed:

- All flowlines and gas lift lines were flushed and filled with treated seawater and production flowlines disconnected, with the exception of the H4 flowline which was blocked by sand and hydrates during production. The H4 flowline is disconnected, sealed and lying on the seabed. Hydrates are ice like solids that form when water and natural gas combine at high pressure and low temperatures. They are stable and pose no impact to the environment.

- All production, gas and water injection wells were shut in and capped.
- The Stybarrow Venture FPSO was disconnected from the DTM and departed the field in August 2015.

During an echo sounding survey of the facilities in 2016, the DTM was found to have lost buoyancy and is now lying on the seabed at a depth of approximately 820 meters. Since then, the buoyancy modules from the risers have been removed to eliminate the risk of floating equipment coming to the sea surface.

### Communications with mariners

**Well P&A:** The Operational Area includes the area encompassing an approximate 3,000 m radius around each of the four drill centers within WA-32-L. It is intended that a temporary 500 m exclusion zone will apply around the MODU and the associated project vessels during P&A activities.

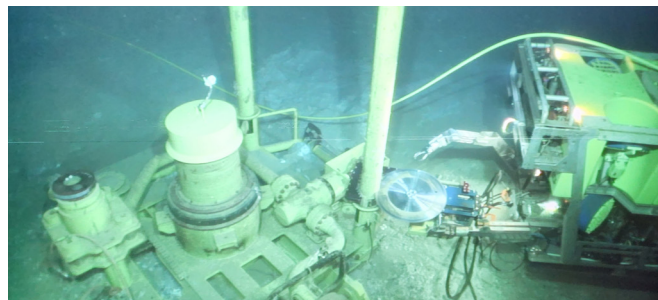
**Removal activities:** The Operational Area includes the area encompassing an approximate 1,500 m radius around the subsea infrastructure and wellheads. It is intended that a temporary 500 m exclusion zone will apply around the Construction Support Vessel and the associated project vessels during removal activities.

The DTM has an existing 1200 m radius petroleum safety zone which will continue to be in place until it is removed. It is intended that a temporary 500 m exclusion zone will apply around the HLV and the associated project vessels during the removal of the DTM.

Commercial fishers and other marine users are permitted to use but should take care when entering the Operational Area and remain clear of the Exclusion Zone.

Is it intended that subsea infrastructure which is proposed to be left in situ will continue to be marked, and infrastructure proposed to be removed will continue to be marked on navigation charts until it is removed.

It is anticipated that vessels will operate 24 hours per day for the duration of the activities. The duration of these activities is subject to change due to project schedule requirements, vessel availability, weather or unforeseen circumstances.



*Typical subsea cutting activity*

### Decommissioning assessment

Woodside has undertaken an assessment to identify potential risks to the marine environment and relevant persons, considering timing, duration, location and potential impacts arising from the planned activities. A number of mitigation and management measures will be implemented and are summarised in **Table 3**. Further details will be provided in the revised EPs.

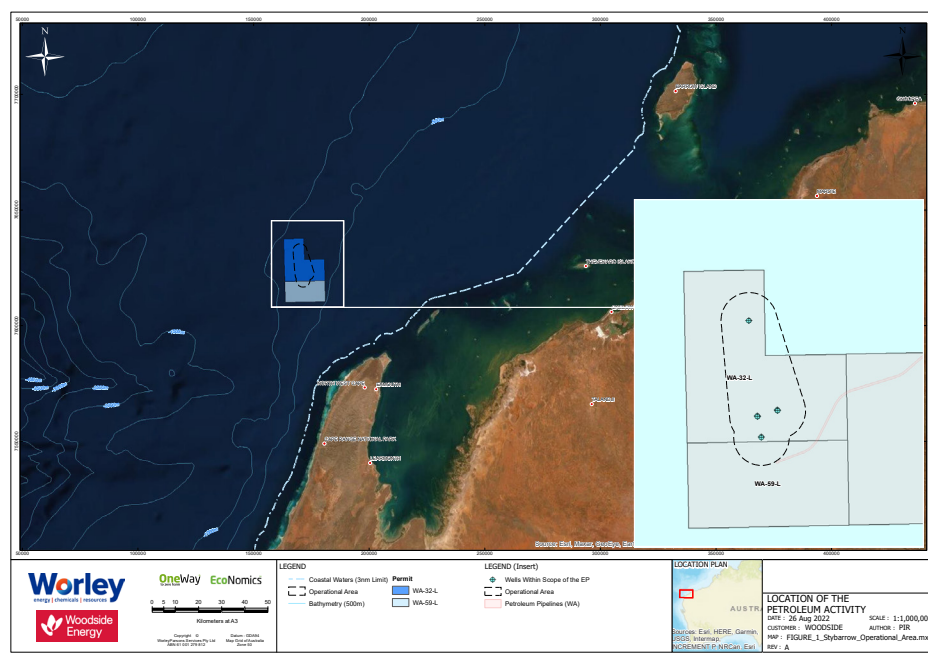
In preparing the EP revisions, Woodside's intent is to minimise environmental and social impacts associated with the proposed activities, and we are seeking comments and input from relevant persons to inform our decision making and for the intended outcome of consultation (see above).

### Joint Venture

Woodside Energy (Australia) Pty Ltd is operator and sole titleholder of WA-32-L.

Woodside Energy (Australia) Pty Ltd is operator of WA-12-L SR on behalf of Joint Venture participant Mobil Australia Resources Company Pty Ltd.

**We welcome your feedback by 17 March 2023.**



*Figure 1. Stybarrow Location Map*



*Typical subsea equipment recovery activity*

**Table 1. Activity summary**

| Stybarrow Decommissioning activities    | Well P&A                                                                                                                                                                                                                                                                                                                                                               | Equipment Removal                                                                                                                                                                                                                                                                  | DTM Removal                                                                                                                                                                                                                                          | Stybarrow Field Deviation EP                                                                                                        |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|                                         | <b>Stybarrow Plug and Abandonment EP</b>                                                                                                                                                                                                                                                                                                                               | <b>Stybarrow Decommissioning and Field Management EP</b>                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                      |                                                                                                                                     |
| <b>Summary</b>                          | <p>Permanent P&amp;A of 10 wells (6 productions wells, 3 water injections wells and 1 gas injection well).</p> <p>Potential removal of wellhead and subsea trees, either by MODU or CSV.</p> <p>Potential unblocking of the H4 flowline, if deemed feasible.</p>                                                                                                       | <p>Removal of subsea equipment including wellheads, trees, manifolds, risers, flexible flowlines, umbilicals.</p> <p>Ongoing field management activities (equipment monitoring and inspection).</p>                                                                                | <p>Removal of the DTM and its moorings.</p> <p>Recovery of the DTM may require it to be towed to shallower water outside of permit area WA-32-L. In this instance, it will be towed to WA-12-L, adjacent to the Woodside-operated Griffin field.</p> | <p>Proposal to leave in situ of 9 suction piles (largely buried), 9 drag anchors (buried) and the historical Eskdale-1 wellhead</p> |
| <b>Commencement date</b>                | <p>Earliest P&amp;A start is around Q4 2023, subject to approvals, MODU vessel availability and weather constraints. P&amp;A must be completed no later than 30 September 2024, pursuant to General Direction 833.</p>                                                                                                                                                 | <p>Earliest facilities removal is estimated to be Q4 2023, subject to approvals, MODU vessel availability and weather constraints. Equipment removal must be completed no later than 31 March 2025, pursuant to General Direction 833.</p>                                         | <p>Earliest DTM recovery is estimated to be Q4 2023, subject to approvals, Heavy Lift vessel (HLV) availability and weather constraints. Removal must be completed no later than 31 March 2025 pursuant to General Direction 833.</p>                | N/A – no activities                                                                                                                 |
| <b>Simultaneous Operations (SIMOPS)</b> | Potential SIMOPs may occur with subsea infrastructure and DTM removal activities if vessel and equipment availabilities permit.                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                      | N/A (no activities)                                                                                                                 |
| <b>Petroleum Title</b>                  | WA-32-L                                                                                                                                                                                                                                                                                                                                                                | WA-32-L                                                                                                                                                                                                                                                                            | WA-32-L<br>WA-12-L                                                                                                                                                                                                                                   | WA-32-L                                                                                                                             |
| <b>Operational Area</b>                 | The Operational Area includes the area encompassing an approximate 3,000 m radius around each of the four drill centers within WA-32-L.                                                                                                                                                                                                                                | The Operational Area includes the area encompassing an approximate 1,500 m radius around the subsea infrastructure and wellheads.                                                                                                                                                  |                                                                                                                                                                                                                                                      | N/A                                                                                                                                 |
| <b>Exclusion Zones</b>                  | A temporary 500 m exclusion zone will apply around the MODU and the associated project vessels during P&A activities.                                                                                                                                                                                                                                                  | <p>The DTM has an existing 1200 m radius petroleum safety zone which will continue to be in place until it is removed.</p> <p>A temporary 500 m exclusion zone will apply around the Construction Support Vessel and the associated project vessels during removal activities.</p> | A temporary 500 m exclusion zone will apply around the HLV and the associated project vessels during the removal of the DTM.                                                                                                                         | N/A                                                                                                                                 |
| <b>Estimated duration</b>               | <p>-6 - 9 months with the following approximate activity breakdowns:</p> <ul style="list-style-type: none"> <li>• Preparatory activities (-4 – 7 days per well)</li> <li>• P&amp;A (-18 – 24 days per well)</li> <li>• Removal of Well Infrastructure (-1 – 5 days per well)</li> <li>• Recovery of moorings and ancillary equipment (-1 – 2 days per well)</li> </ul> | <p>-4-6 months with the following approximate activity breakdowns:</p> <ul style="list-style-type: none"> <li>• Flexible flowline recovery (-2 months)</li> <li>• Seabed equipment recovery (-1-2 months)</li> <li>• H4 flowline recovery (-1-2 months)</li> </ul>                 | <p>Up to -1 month:</p> <ul style="list-style-type: none"> <li>• -1-2 weeks preparatory activities (disconnection of risers, mooring chains)</li> <li>• -1-2 weeks for recovery, in WA-32L or WA-12L</li> </ul>                                       | N/A (no activities)                                                                                                                 |
| <b>Location and Water depth</b>         | -53 km north west of Exmouth, 810-85 m water depth                                                                                                                                                                                                                                                                                                                     | -53 km north west of Exmouth, 810-850 m water depth                                                                                                                                                                                                                                | 71 km north east of WA-32-L, 120 m water depth                                                                                                                                                                                                       | -53 km north west of Exmouth, 810-85 m water depth                                                                                  |

|                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Infrastructure</b>                                                                                                                                                                                                                                  | 6 x production wells<br>3 x water injection wells<br>1 x gas injection well<br>The P&A covers the following optional scopes that may be conducted on the MODU or otherwise be covered during the facilities removal scope: <ul style="list-style-type: none"> <li>Removal of well infrastructure above the mudline including wellheads and xmas trees.</li> <li>Intervention from the MODU to unblock sand, hydrates and hydrocarbons from inside the H4 flowline, if determined feasible, prior to removal.</li> </ul> | 9 x DTM mooring legs/chains<br>9 support buoys<br>9 flexible risers<br>8 flexible production flowlines<br>4 gas injection/lift flowlines<br>2 water injection flowlines<br>All flying leads, jumpers and umbilicals<br>1 water injection manifold<br>7 subsea distribution units<br>15 anode skids<br>10 wellheads and trees<br>The EP includes ongoing field maintenance activities as required until equipment is removed. | DTM structure, steel construction, conical shape, -15 m diameter, -15 m height, -800 tonnes (in air)                                                                                               | Leave in situ proposed for:<br>9 suction piles (embedded in seabed)<br>9 drag anchors (buried)<br>The historical Eskdale -1 wellhead<br>Contaminant assessments have been conducted for the materials within these items (steel, concrete, cement) and they pose no short-term or long-term risk to the environment. |
|                                                                                                                                                                                                                                                        | <b>Vessels</b><br>Semi Submersible Mobile Offshore Drilling Unit (MODU).<br>MODU supported by 2 – 3 offshore support vessels.                                                                                                                                                                                                                                                                                                                                                                                           | Construction Support Vessel (CSV).                                                                                                                                                                                                                                                                                                                                                                                           | Heavy Lift Vessel (HLV) with dynamic positioning (DP).<br>Anchor handling tugs (AHTs) required to support the towing of the DTM to the shallower water location (if required), to support the HLV. | N/A                                                                                                                                                                                                                                                                                                                  |
| Offshore support vessels, such as general support/supply vessels, construction support/installation vessels. Typically two (but up to six) project vessels may be in the Operational Area during well P&A and subsea infrastructure removal activities |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                      |
| <b>Distance to nearest marine park/mature reserve</b>                                                                                                                                                                                                  | 5 km to Gascoyne Commonwealth Marine Park<br>24 km to Ningaloo Marine Park (Commonwealth)<br>36 km to Ningaloo Marine Park (State)<br>45 km to Murion Islands Marine Management Area                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                      |

**Table 2. Approximate location and activity/end state**

| Subsea Infrastructure             | Easting                               | Northing   |                                                                                                                                                                                            |
|-----------------------------------|---------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTM buoy                          | 170873.2                              | 7624770.8  | Remove                                                                                                                                                                                     |
| DTM mooring legs – chain and wire | Between anchors and DTM buoy          |            | Remove                                                                                                                                                                                     |
| Mooring Anchor 1                  | 172172.4                              | 7624323.5  | Leave <i>in situ</i> proposed, with chains removed<br>Anchors are 11 tonne Stevpris Mk5 Vryhof drag anchors, -6m x 6m x 3m, constructed from mild steel                                    |
| Mooring Anchor 2                  | 172215.2                              | 7624441.7  |                                                                                                                                                                                            |
| Mooring Anchor 3                  | 172237.1                              | 7624561.1  |                                                                                                                                                                                            |
| Mooring Anchor 4                  | 170594.8                              | 7626195    |                                                                                                                                                                                            |
| Mooring Anchor 5                  | 170489.2                              | 7626161.1  |                                                                                                                                                                                            |
| Mooring Anchor 6                  | 170372.9                              | 7626127.5  |                                                                                                                                                                                            |
| Mooring Anchor 7                  | 169759.4                              | 7623909.3  |                                                                                                                                                                                            |
| Mooring Anchor 8                  | 169828.7                              | 7623775.8  |                                                                                                                                                                                            |
| Mooring Anchor 9                  | 169943.1                              | 7623715.9  |                                                                                                                                                                                            |
| Mooring support buoys             | With mooring legs                     |            | Remove                                                                                                                                                                                     |
| Dynamic umbilical riser base      | 171433.8                              | 7625113.9  | Leave <i>in situ</i> proposed, with chains and clamps removed.<br><br>Riser bases are -4m in diameter, -7m high embedded in the seabed with -0.75m protruding, constructed from mild steel |
| Water injection riser base        | 171491.8                              | 7624359.1  |                                                                                                                                                                                            |
| H4 Gas lift riser base            | 171256.2                              | 7624136.9  |                                                                                                                                                                                            |
| EG1 gas injection riser base      | 171121.0                              | 7625533.9  |                                                                                                                                                                                            |
| H4 production riser base          | 171080.4                              | 7624061.0  |                                                                                                                                                                                            |
| H3 production riser base          | 170894.3                              | 7624028.6  |                                                                                                                                                                                            |
| H2 production riser base          | 170704.2                              | 7624040.9  |                                                                                                                                                                                            |
| H1 production riser base          | 170526.5                              | 7624100.2  |                                                                                                                                                                                            |
| EH1 production riser base         | 170921.2                              | 7625578.0  |                                                                                                                                                                                            |
| Flexible production flowlines     | Between risers and drill centres      |            | Remove                                                                                                                                                                                     |
| H4 flowline                       | Adjacent to H4 riser and drill centre |            | Remove – flowline was blocked with sand, hydrocarbons and hydrates during operation and attempts to unblock prior to removal will be made                                                  |
| Gas injection/lift flowlines      | Between risers and drill centres      |            | Remove                                                                                                                                                                                     |
| Water injection flowlines         |                                       |            | Remove                                                                                                                                                                                     |
| Umbilicals                        |                                       |            | Remove                                                                                                                                                                                     |
| Jumpers                           | With drill centres                    |            | Remove                                                                                                                                                                                     |
| Water injection manifold          | 171486.5                              | 7624333.0  | Remove                                                                                                                                                                                     |
| Riser base SDU                    | 171223.8                              | 7624891.4  | Remove                                                                                                                                                                                     |
| SDU A                             | 173159.3                              | 7622671.3  | Remove                                                                                                                                                                                     |
| SDU B                             | 171004.5                              | 7622008.6  | Remove                                                                                                                                                                                     |
| SDU C                             | 171443.1                              | 7619702.8  | Remove                                                                                                                                                                                     |
| SDU D                             | 170065.5                              | 7632321.3  | Remove                                                                                                                                                                                     |
| DC-A UTA                          | 173183.0                              | 7622582.1  | Remove                                                                                                                                                                                     |
| DC-B UTA                          | 171019.6                              | 7621973.9  | Remove                                                                                                                                                                                     |
| Anode skids                       | Various                               |            | Remove                                                                                                                                                                                     |
| Stybarrow 5 (I-3) well            | 173119.0                              | 7622683.9  | P&A of 10 wells. Removal of wellhead and subsea trees, either by MODU or CSV                                                                                                               |
| Stybarrow 6 (I-2) well            | 173143.9                              | 7622636.2  |                                                                                                                                                                                            |
| Stybarrow 12 (H-5) well           | 173172.8                              | 76225560.7 |                                                                                                                                                                                            |
| Stybarrow 9 (I-1) well            | 171032.3                              | 7621985.6  |                                                                                                                                                                                            |
| Stybarrow 10 (H-3) well           | 170958.1                              | 7621964.1  |                                                                                                                                                                                            |
| Stybarrow 11 (H-4) well           | 170980.5                              | 7622056.3  |                                                                                                                                                                                            |
| Stybarrow 7 (H-2) well            | 171413.3                              | 7619728.6  |                                                                                                                                                                                            |
| Stybarrow 8 (H-1) well            | 171403.1                              | 7619659.9  |                                                                                                                                                                                            |
| Eskdale 3 (EH1) well              | 170065.1                              | 7632345.3  |                                                                                                                                                                                            |
| Eskdale 4 (EG1) well              | 170024.5                              | 7632318.3  |                                                                                                                                                                                            |
| Eskdale-1 well                    | 170896.6                              | 7634287.2  |                                                                                                                                                                                            |
|                                   |                                       |            | Well was plugged and abandoned in 2003 following drilling. Wellhead removal unsuccessful – proposed to remain <i>in situ</i>                                                               |



## Environment That May Be Affected (EMBA)

The environment that may be affected (EMBA) is the largest spatial extent where unplanned events could potentially have an environmental consequence. For this EP, the broadest extent of the EMBA has been determined by the highly unlikely event of a hydrocarbon release from both the direct and indirect activities the subject of the EP. The worst-case credible spill scenario for these EPs is loss of well containment during the well P&A activities.

The EMBA does not represent the predicted impact of the highly unlikely oil release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel depending on the weather and ocean conditions at the time of the release.

This means that in the highly unlikely event that a hydrocarbon release does occur, the entire EMBA will not be affected and the specific and minimal part of the EMBA that is affected will only be known at the time of the release.

There are three potential MBAs for this EP, reflecting the activities and the different locations that the activity could occur.

Each of the MBAs are presented in Figure 2 below and summarised as:

- **Loss of Well Containment EMBA** : Primary activity of the Well P&A EP – P&A of 10 production/injection wells by a MODU.
- **Facilities Equipment Removal EMBA** : Primary activity for the Stybarrow Decommissioning and Field Management EP – Recovery of subsea infrastructure using a CSV.
- **DTM Tow Location EMBA** : Option for the removal of the DTM, an activity within the Stybarrow Decommissioning and Field Management EP – DTM towed from its current location approximately 65 km to permit area WA-12-L SR (adjacent to Griffin permit area) for recovery by the HLV in shallow water. This EMBA has been adopted from the worst-case spill from a vessel collision at the Griffin removal location.

Given the buried nature of the infrastructure proposed to remain in situ and the absence of related activities for the infrastructure, the EMBA for this EP is the footprint of the equipment.



Figure 2. Environment that may be affected (EMBA) for the proposed activity.

## Mitigation and Management Measures

Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from the decommissioning activities considering timing, duration, location.

A number of mitigation and management measures for the removal of the RTM are outlined in **Table 3**. Further details will be provided in the EP.

**Table 3. Summary of key risks and/or impacts and management measures for the Stybarrow Decommissioning activities. Key risks and/or impacts and management measure apply to activities occurring within the title area and tow location.**

| Potential Impact/ Risk                                                                                                              | Description of Source of Potential Impact/ Risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Description of Potential Impacts                                                                                                                                                                                                                                                                                                                                                                            | Proposed Mitigation and/ or Management Measure                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Planned</b>                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Physical presence and interactions with other marine users</b>                                                                   | <ul style="list-style-type: none"> <li>The activities will be undertaken using a range of project vessels, namely a MODU, CSV and a HLV, along with general support project vessels. A 500 m petroleum safety zone will apply around the equipment locations. If the DTM is towed out of title, a 500 m exclusion zone will apply to the DTM and project vessels during tow and lifting.</li> <li>Presence of vessels in the safety and exclusion zones has the potential to result in interaction with third-party marine users.</li> </ul> | <ul style="list-style-type: none"> <li>Interference with commercial shipping.</li> <li>Interference with commercial fishing activity.</li> <li>Displacement of recreational fishing activity.</li> <li>Interaction with existing oil and gas infrastructure.</li> </ul>                                                                                                                                     | <ul style="list-style-type: none"> <li>500 m petroleum safety zone maintained around equipment until removal.</li> <li>500 m exclusion zone established around the MODU and project vessels.</li> <li>Activity support vessel(s) to communicate with third-party vessels to assist in maintaining the petroleum safety zone/ exclusion zones.</li> <li>Consultation with relevant persons for the consultation outcomes.</li> </ul> |
| <b>Physical presence of infrastructure on seabed causing seabed disturbance interference and displacement of other marine users</b> | <ul style="list-style-type: none"> <li>Excess marine growth may need to be removed from the equipment prior to removal using high-pressure water jetting.</li> <li>Equipment deburial and short-term wet parking of infrastructure may be required.</li> </ul>                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>Removal activities may result in localised, temporary seabed disturbance from resuspension of sediments.</li> <li>Marine growth removal may result in highly localised seabed disturbance as debris deposits on the seabed.</li> <li>Interference or displacement of commercial fishing activity.</li> <li>Displacement of recreational fishing activity.</li> </ul> | <ul style="list-style-type: none"> <li>Use controlled recovery techniques to limit seabed disturbance.</li> <li>Equipment to be marked on navigational charts until removal.</li> </ul>                                                                                                                                                                                                                                             |
| <b>Discharges: Project Vessels</b>                                                                                                  | <ul style="list-style-type: none"> <li>Sewage, greywater and putrescible waste will be discharged from project vessels.</li> <li>Bilge water, deck drainage and brine and cooling water may also be discharged.</li> </ul>                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>Short-term, localised impacts to water quality i.e. eutrophication from the addition of nutrients from these discharge fluids.</li> </ul>                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>All routine marine discharges will be managed according to legislative and regulatory requirements.</li> </ul>                                                                                                                                                                                                                                                                               |
| <b>Discharges: Decommissioning Activities</b>                                                                                       | <ul style="list-style-type: none"> <li>During equipment removal, small volumes of treated seawater within the equipment will be released into the surrounding environment.</li> <li>Chemical use may be required to remove marine growth.</li> <li>During recovery of the blocked H4 flowline, it may be necessary to cut and recover rather than unblocking, resulting in a release of up to 14m<sup>3</sup> crude oil and sand</li> </ul>                                                                                                  | <ul style="list-style-type: none"> <li>Localised short-term impacts to water quality from the release of seawater ballast and residual chemicals and hydrocarbons.</li> </ul>                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>Chemical reviews performed on all previously approved chemicals to confirm potential impacts are reduced to ALARP.</li> </ul>                                                                                                                                                                                                                                                                |

| Potential Impact/<br>Risk                                                                          | Description of Source of<br>Potential Impact/ Risk                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Description of Potential<br>Impacts                                                                                                                                                                                                                                                                                                           | Proposed Mitigation and/ or Management<br>Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| <b>Light Emissions</b>                                                                             | <ul style="list-style-type: none"> <li>Project vessels and MODU will use external lighting to navigate and conduct safe operations at night.</li> <li>Vessel lighting will also be used to communicate the vessel's presence to other marine users (i.e. navigation/ warning lights).</li> <li>Light emissions may be generated by flaring during well P&amp;A if required. Flaring is only expected to occur for short durations (hours).</li> </ul>                                                            | <ul style="list-style-type: none"> <li>Light emissions have the potential to affect fauna such as marine turtles and birds by influencing changes in behaviour or impacting their orientation.</li> </ul>                                                                                                                                     | <ul style="list-style-type: none"> <li>Implement relevant controls in the National Light Pollution Guidelines for Wildlife including Marine Turtles, Seabirds and Migratory Shorebirds (2020).</li> <li>Lighting will be limited to the minimum required for navigational and safety requirements except in emergency circumstances.</li> <li>Maintain a 12 km buffer from turtle nesting beaches during towing and lifting activities to avoid impacts to turtle hatchlings.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Noise Emissions</b>                                                                             | <ul style="list-style-type: none"> <li>Project vessels will generate noise both in the air and underwater due to the operation or thruster engines, propellers, and the use of cutting tools subsea.</li> </ul>                                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>Noise from project vessels and the MODU will contribute to ambient noise levels.</li> <li>Elevated underwater noise has the potential to affect marine fauna.</li> </ul>                                                                                                                               | <ul style="list-style-type: none"> <li>Maintain a 12 km buffer from turtle nesting beaches during towing and lifting activities to avoid impacts to turtles.</li> <li>Compliance with legislative and regulatory requirements for interactions with marine fauna to prevent adverse interactions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Atmospheric Emissions</b>                                                                       | <ul style="list-style-type: none"> <li>Atmospheric emissions will be generated by the MODU and project vessels from internal combustion engines and incineration activities.</li> <li>Atmospheric emissions will be generated from venting of residual gas and contingent flaring from the MODU during P&amp;A activities</li> </ul>                                                                                                                                                                             | <ul style="list-style-type: none"> <li>Emissions from project vessels could result in temporary, localised reductions in air quality in the immediate vicinity of the vessels.</li> <li>Venting or flaring of hydrocarbon gas may result in a short-lived localised gas plume and a minor contribution to greenhouse gas emissions</li> </ul> | <ul style="list-style-type: none"> <li>Compliance with legislative and regulatory requirements for marine air pollution.</li> <li>Flaring and venting of hydrocarbons is restricted to a duration necessary to perform the P&amp;A activity.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Unplanned</b>                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Unplanned Hydrocarbon Release – vessel collision or Loss of Well Containment during P&amp;A</b> | <ul style="list-style-type: none"> <li>Project vessels will use marine diesel fuel.</li> <li>In the unlikely event of a vessel collision involving a project vessel or third-party vessels during the activity, there is potential for a release of marine diesel fuel if the collision has enough force to penetrate the vessel hull in the exact location of the fuel tank.</li> <li>In the highly unlikely event of loss of well containment, there is the potential for a release of well fluids.</li> </ul> | <ul style="list-style-type: none"> <li>In the highly unlikely event of a vessel collision causing a release of hydrocarbons, impacts to water quality and marine ecosystems could occur.</li> </ul>                                                                                                                                           | <p><b>Preventing Vessel Collision:</b></p> <ul style="list-style-type: none"> <li>500 m exclusion zone established around the equipment and project vessels during removal activities.</li> <li>Compliance with legislative and regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements.</li> <li>Consultation with relevant persons to ensure other marine users are informed and aware, reducing the likelihood of a collision.</li> <li>Develop a management plan for simultaneous operations where multiple campaigns occur concurrently in the same Operational Area.</li> </ul> <p><b>Spill Response Arrangements:</b></p> <ul style="list-style-type: none"> <li>Arrangements supporting the Oil Pollution Emergency Preparation document (OPEP) will be tested to ensure the OPEP can be implemented as planned.</li> <li>Emergency response activities would be implemented in line with the OPEP.</li> </ul> |



| Potential Impact/<br>Risk                                           | Description of Source of<br>Potential Impact/ Risk                                                                                                                                                                                                                                                                                           | Description of Potential<br>Impacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Proposed Mitigation and/ or Management<br>Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Deck Spills and Bunkering</b>                                    | <ul style="list-style-type: none"> <li>Accidental deck spills from project vessels can include stored hydrocarbons, chemicals or equipment.</li> </ul>                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>Deck spills could result in short term, localised impacts to water quality or marine fauna in the immediate area surrounding the spill.</li> </ul>                                                                                                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>Compliance with legislative and regulatory requirements for the prevention of marine pollution.</li> <li>Liquid chemical and fuel storage areas banded or secondarily contained when they are not being handled or temporarily moved.</li> <li>Maintain and locate spill kits in close proximity to hydrocarbon storage and deck areas for use to contain and recover deck spills</li> <li>Appropriate bunkering equipment kept and maintained, and contractors to follow procedures and requirements for bunkering and refuelling to reduce the likelihood of a spill.</li> </ul>                                                                                                                                                                                       |
| <b>Unplanned Discharge of Solid Hazardous/ Non-Hazardous Wastes</b> | <ul style="list-style-type: none"> <li>Accidental, unplanned loss of hazardous solid wastes such as oily rags or paint cans from the project vessels.</li> </ul>                                                                                                                                                                             | <ul style="list-style-type: none"> <li>Short term, localised impacts to water quality or marine fauna in the area surrounding the release.</li> <li>Incorrect classification of waste can also result in inappropriate disposal of hazardous decommissioning wastes.</li> </ul>                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>Compliance with legislative and regulatory requirements for the prevention of marine pollution and handling of hazardous wastes</li> <li>Project vessel waste arrangements to ensure waste is recorded and segregated and that all non-putrescible waste (excludes all food, greywater or sewage waste) to be disposed of onshore.</li> <li>Lost waste and dropped objects will be recovered, where safe and practicable.</li> <li>Waste contractors engaged to identify potential waste disposal pathways.</li> <li>Infrastructure and resource recovery strategy that ensures waste is handled and disposed of in accordance with applicable legislation, monitors and tracks waste and sets KPIs for recycling and reuse of decommissioned infrastructure.</li> </ul> |
| <b>Vessel Collision with Marine Fauna</b>                           | <ul style="list-style-type: none"> <li>Vessel movements have the potential to result in collisions between the vessel (hull and propellers) and marine fauna.</li> </ul>                                                                                                                                                                     | <ul style="list-style-type: none"> <li>Vessel disturbance presents a potential threat to marine mammals, marine reptiles and fish, sharks and rays.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>Compliance with legislative and regulatory requirements for interactions with marine fauna to reduce the likelihood of a collision occurring.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Disturbance to Seabed from Dropped Objects</b>                   | <ul style="list-style-type: none"> <li>Accidental, unplanned dropping of objects overboard from project vessels during recovery operations.</li> </ul>                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>Short term, localised impacts to sediment quality and benthic habitats.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>Project vessel inductions include control measures and training for crew in dropped object prevention.</li> <li>Lost waste/ dropped objects will be recovered where safe and practicable to do so.</li> <li>Procedures for lifts, bulk transfers and cargo loading if an unplanned object release does occur.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Accidental Introduction of Invasive Marine Species</b>           | <ul style="list-style-type: none"> <li>Vessels transiting to the Operational Area may be subject to marine fouling whereby organisms attach to the vessel hull.</li> <li>Organisms can also be drawn into ballast tanks during onboarding of ballast water</li> <li>IMS could also be present as biofouling on subsea structures.</li> </ul> | <ul style="list-style-type: none"> <li>It is not credible for IMS to be introduced and establish on the seabed or subsea structures in the Operational Area as these deep waters are not conducive to the settlement and establishment of IMS.</li> <li>There is potential for the transfer of IMS between the project vessels and DTM while in its currently location within the Operational Area, or for IMS to be established in the shallower waters of the controlled sinking location or tow route and lift location.</li> </ul> | <ul style="list-style-type: none"> <li>Ballast water will be managed according to legislative and regulatory requirements.</li> <li>Application of Woodside's IMS risk assessment and appropriate management measures to the RTM, project vessels and relevant immersible equipment such as Remotely Operated Vehicles (ROVs), unless exempt.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Potential Impact/<br>Risk | Description of Source of<br>Potential Impact/ Risk                                                                                | Description of Potential<br>Impacts                                                                                 | Proposed Mitigation and/ or Management<br>Measure                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Indirect                  |                                                                                                                                   |                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Waste generation</b>   | <ul style="list-style-type: none"> <li>Removal of the subsea equipment will result in the generation of waste products</li> </ul> | <ul style="list-style-type: none"> <li>Generation of waste products that require appropriate management.</li> </ul> | <ul style="list-style-type: none"> <li>Recovered equipment will be transported onshore by a licensed waste contractor for disposal including recycling and reuse opportunities.</li> <li>Waste generated on the vessels will be managed in accordance with legislative requirements.</li> <li>Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment.</li> </ul> |

## Feedback

If you would like to comment on the proposed activities outlined in this information sheet, or would like additional information, please contact Woodside before 17 March 2023 via:

**E: [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au)**

**Toll free: 1800 442 977**

You can subscribe on our website to receive Consultation Information Sheets for proposed activities: **[www.woodside.com/sustainability/consultation-activities](http://www.woodside.com/sustainability/consultation-activities)**.

Please note that stakeholder feedback will be communicated to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) as required under legislation. Woodside will communicate any material changes to the proposed activity to affected stakeholders as they arise.

Please note that your feedback and our response will be included in our EP for the proposed activity, which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.